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10/018,721	04/22/2002	Karsten Meyer-Grafe	(H)01PH0419USP	2612

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EXAMINER

KOSOWSKI, ALEXANDER J

ART UNIT	PAPER NUMBER
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2125

DATE MAILED: 04/08/2004

10

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/018,721

Applicant(s)

MEYER-GRAFE ET AL.

Examiner

Alexander J Kosowski

Art Unit

2125

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 January 2004.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 32-55 and 57-66 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 32-55 and 57-66 is/are rejected.
7) ☒ Claim(s) 32,57 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 21 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Art Unit: 2125

DETAILED ACTION

- 1) Claims 32-55 and 57-66 are presented for examination in light of the amendment filed 1/21/04.

Drawings

- 2) The examiner has approved the new drawings filed 1/21/04.

Specification

- 3) In the amendment filed 1/24/04, the changes to the specification were not entered in the case because the changes were improperly listed in the amendment *after* the "Remarks" section of the amendment. In order to assure that the amendments to the specification are officially entered in the case, please list the specification changes at the beginning before any claim amendments in the response to this office action. Since the amendments to the specification have not been entered, the following informalities are still relevant.

- 4) The disclosure is objected to because of the following informalities:

Referring to Paragraph 0001, line 4, the phrase "operation such" should read --operation of such--.

Referring to Paragraph 0002, line 3, the phrase "components an which" should read --components on which--.

Referring to Paragraph 0003, line 9, the phrase "links an the" should read --links and the--.

Referring to Paragraph 0005, line 5, the phrase "an or off" should read --on or off--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

Art Unit: 2125

5) The 112 rejections of claims 47-66 are withdrawn in light of the amendment filed 1/21/04.

6) The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7) Claim 47 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 47 recites the limitation "the bus datastream" in lines 6, and 9-10, and the limitation "the datastream on the bus" in line 12. There is insufficient antecedent basis for these limitations in the claim.

Claim Objections

8) The objections to claims 32-34, 36-37, 39, 42-47, 49-51, 53-57, 58-59, 60-61, and 63-65 are withdrawn in light of the amendment filed 1/21/04.

Referring to claim 32, line 6, the phrase "monitors the data flow" should read --which monitors the data flow--.

Referring to claim 57, the claim depends on claim 56, which has been canceled in the amendment filed 1/21/04.

Claim Rejections - 35 USC § 102

9) The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this

Art Unit: 2125

subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10) Claims 32-37, 39, 42-55, 57 and 60-66 are rejected under 35 U.S.C. 102(e) as being unpatentable by Kramer et al (U.S. Pat 6,466,539).

Referring to claim 32, Kramer discloses an automation system comprising at least a bus (col.1 lines 9-10), I/O bus subscribers connected to the bus (col. 1 lines 7-9), a standard control device (col. 5 lines 48-55), and at least one safety analyzer which is connected to the bus separately by means of an appropriate interface which monitors data flow via the bus system and is designed to carry out at least one safety-related function (col. 5 lines 29-39 and col. 5 line 61 through col. 6 line 6, whereby the bus signals connect through the safety analyzers, creating an appropriate interface), wherein the safety analyzer is set up for checking and processing safety-related data in a bus datastream and has a device for manipulating the datastream transmitted on the bus (col. 6 lines 44-52 and col. 7 lines 7-12).

Referring to claim 33, Kramer discloses that the standard control device controls at least one safety-related output (col. 6 lines 48-51).

Referring to claim 34, Kramer discloses that the safety analyzer has a freely programmable logic device, which processes monitored safety-related data (col. 2 line 45, whereby a CPU is considered to be freely programmable).

Referring to claim 36, Kramer discloses that the safety analyzer is set up for switching off the entire automation system (col. 6 lines 47-55).

Referring to claim 37, Kramer discloses that the safety analyzer has at least one safety-related input via which the safety analyzer is connected to a safety-related device in the automation system for detecting safety-related data (col. 3 lines 8-16).

Art Unit: 2125

Referring to claim 39, Kramer discloses that the bus is a serial bus (col. 1 lines 9-10) and at least one safety analyzer is arranged in a long-distance bus section of the automation system (col. 1 lines 8-9).

Referring to claim 42, Kramer discloses that the safety analyzer comprises a memory device for storing a process map (col. 1 lines 30-31).

Referring to claim 43, Kramer discloses that the safety analyzer has a device for manipulating at least one of input data and output data transmitted on the bus (col. 6 lines 44-52 and col. 7 lines 7-12).

Referring to claim 44, Kramer discloses that the device overwrites at least one of the input and output data in the safety analyzer (col. 6 lines 44-52 and col. 7 lines 7-12).

Referring to claim 45, Kramer discloses that the device inserts data into the datastream (col. 6 lines 44-52 and col. 7 lines 7-12).

Referring to claim 46, Kramer discloses that at least one safety analyzer is of redundant design (col. 1 lines 19-21).

Referring to claim 47, Kramer discloses a method for operating an automation system comprising using a standard control device for carrying out a process control with the processing of process-link I/O data and safety-related data (col. 3 lines 1-16) and carrying out processing of safety-related data in at least one safety analyzer with safety-related logic linking data in a bus datastream being processed in the safety analyzer (col. 7 lines 7-12), wherein inserting at least one data item in the bus datastream is performed by the safety analyzer by means of a device for manipulating the datastream on the bus (col. 6 lines 44-52 and col. 7 lines 7-12).

Art Unit: 2125

Referring to claim 48, Kramer discloses that the standard control device controls at least one safety-related output (col. 6 lines 48-51).

Referring to claim 49, Kramer discloses comparing the safety-related logic linking data, which is transmitted via the bus, for at least one of the standard control device and at least one further safety analyzer with the corresponding logic linking data of the first safety analyzer, in a safety analyzer (col. 6 lines 34-62, whereby each safety device can communicate with the others).

Referring to claim 50, Kramer discloses the step of checking the logic linking data, which is produced by the standard control and is sent as output data via the bus in at least one safety analyzer by modeling the safety-related logic links of the standard control (col. 6 lines 34-62).

Referring to claim 51, Kramer discloses carrying out safety-related functions in response to the comparison by the safety analyzer (col. 7 lines 7-12).

Referring to claim 52, Kramer discloses carrying out safety-related functions in response to the checking by the safety analyzer (col. 7 lines 7-12).

Referring to claim 53, Kramer discloses carrying-out a safety-related function via a safety-related output of the safety analyzer (col. 7 lines 7-12).

Referring to claim 54, Kramer discloses using the safety analyzer to carry out safety-related functions in response to the safety-related data detected via the safety-related input of the safety analyzer (col. 7 lines 7-12).

Referring to claim 55, Kramer discloses that the process of carrying out the safety-related function comprises switching a bus subscriber on or off (col. 6 lines 44-55).

Art Unit: 2125

Referring to claim 57, Kramer discloses that the safety analyzer at least partially stores the monitored datastream and copies input data in the bus datastreams to output data in the bus datastream and vice versa (col. 1 lines 30-31 and col. 6 lines 34-62 and col. 7 lines 7-12).

Referring to claim 60, Kramer discloses that the bus is a system operating on the master-slave principle, with data being transmitted between at least two slaves, by means of a data link via at least one safety analyzer, with the safety analyzer copying data in the bus datastream (col. 3 lines 50-59).

Referring to claim 61, Kramer teaches that data is transmitted between individual bus subscribers (col. 3 lines 1-16).

Referring to claim 62, Kramer teaches that the bus is a system operating on the master-slave principle, with data being transmitted between at least two slaves by means of a data link via the control or the master, with the control or the master copying data in the bus datastream (col. 3 lines 50-59).

Referring to claim 63, Kramer teaches that data is transmitted between individual bus subscribers (col. 3 lines 1-16).

Referring to claim 64, Kramer discloses that quality data is produced by means of a safety analyzer (col. 3 lines 1-16, whereby deviation from a form is monitored).

Referring to claim 65, Kramer discloses that safety-related logic links used in a safety analyzer are carried out in redundant form in at least one further safety analyzer and the same safety functions are at least partially carried out by the two safety analyzers (col. 1 lines 19-47).

Referring to claim 66, Kramer discloses that a safety analyzer also at least partially carries out process data processing (col. 6 lines 34-62).

Claim Rejections - 35 USC § 103

11) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12) Claims 58-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kramer as shown above, further in view of Fulton et al (U.S. Pat 4,680,753).

Referring to claims 58-59, Kramer discloses the system above. However, Kramer does not explicitly teach that the safety-related data is transmitted via the bus using a security protocol comprising an address and data protection information (CRC).

Fulton teaches a bus communication system in an industrial process whereby data transmitted via the bus comprises CRC appended to messages (col. 2 lines 38-46).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to utilize CRC in the bus data transmission system shown by Kramer since using CRC allows data to be validated (Fulton, col. 2 lines 45-46) and since consecutive CRC errors being received is useful to determine when a node needs to be reset (Fulton, col. 10 lines 52-67).

13) Claims 38 and 40-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kramer, further in view of Roth (U.S. Pat 6,577,918).

Referring to claims 38 and 40-41, Kramer discloses the system shown above. Kramer also discloses that safety devices deal with safety-related control (col. 5 lines 29-31). However, Kramer does not explicitly teach that the bus is connected via an interface assembly to a host with the process-related control being arranged in the host and the safety-related control being

Art Unit: 2125

arranged in the interface assembly, nor that the safety analyzer is arranged after the host or in the interface.

Roth teaches a system for processing safety information whereby individual bus subscribers communicate using a master-slave principle, with process data being communicated by means of a master (col. 3 lines 12-27 and Abstract) and whereby a safety analyzer may be located in the interface (col. 2 lines 59-64 and Figure 1, whereby it is noted that the safety analyzer could be arranged elsewhere while still maintaining functionality).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to utilize a bus connected via an interface assembly to a host in the system taught by Kramer since this would allow most processing to be done remotely at the master (Roth, col. 3 lines 12-27), which would reduce the amount of processing power necessary in each node, thus reducing the cost.

14) Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kramer as shown above, further in view of Price et al (U.S. Pat 5,063,527).

Referring to claim 35, Kramer teaches the system above. In addition, Kramer teaches that the safety analyzer has a safety-related output via which a bus subscriber associated with the safety analyzer of the automation system can be switched on or off (col. 6 lines 41-62). However, Kramer does not explicitly teach that the safety analyzer is not a logic bus subscriber.

Price teaches a safety monitor which reads data transmitted from an automation system, wherein the safety monitor is not a bus subscriber (col. 2 lines 4-37).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to utilize a non-bus subscriber as a safety analyzer in the system taught by Kramer

Art Unit: 2125

since this would allow a monitor to check control outputs and initiate control functions to eliminate potentially dangerous situations (Price, col. 2 lines 15-18) and since the monitor does not need to be a subscriber in order to activate safety-related devices.

Response to Arguments

15) All arguments from the amendment filed 1/21/04 are rendered moot in view of the new art rejection above.

However, examiner would like to add that, in response to applicant's arguments against the Fulton and Roth II references individually (references which are still used in 103 rejections in the present invention), one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In addition, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Conclusion

16) The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Dittmar et al (U.S. Pat 5,784,547) – teaches a method for fault-tolerant communications.

Pattantyus-Abraham et al (U.S. Pat 6,325,198) – teaches a manufacturing system which utilizes safety monitors.

Art Unit: 2125

17) Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

18) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander J Kosowski whose telephone number is 703-305-3958. The examiner can normally be reached on Monday through Friday, alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard can be reached on 703-308-0538. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-7239 for regular communications and 703-746-7239 for After Final communications. In addition, the examiner's RightFAX number is 703-746-8370.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Application/Control Number: 10/018,721

Page 12

Art Unit: 2125

Alexander J. Kosowski

Patent Examiner

Art Unit 2125

Albert W. Paladini 4-2-04
ALBERT W. PALADINI
PRIMARY EXAMINER